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PROGRESS

of the

Barberry Eradication Campaign

in

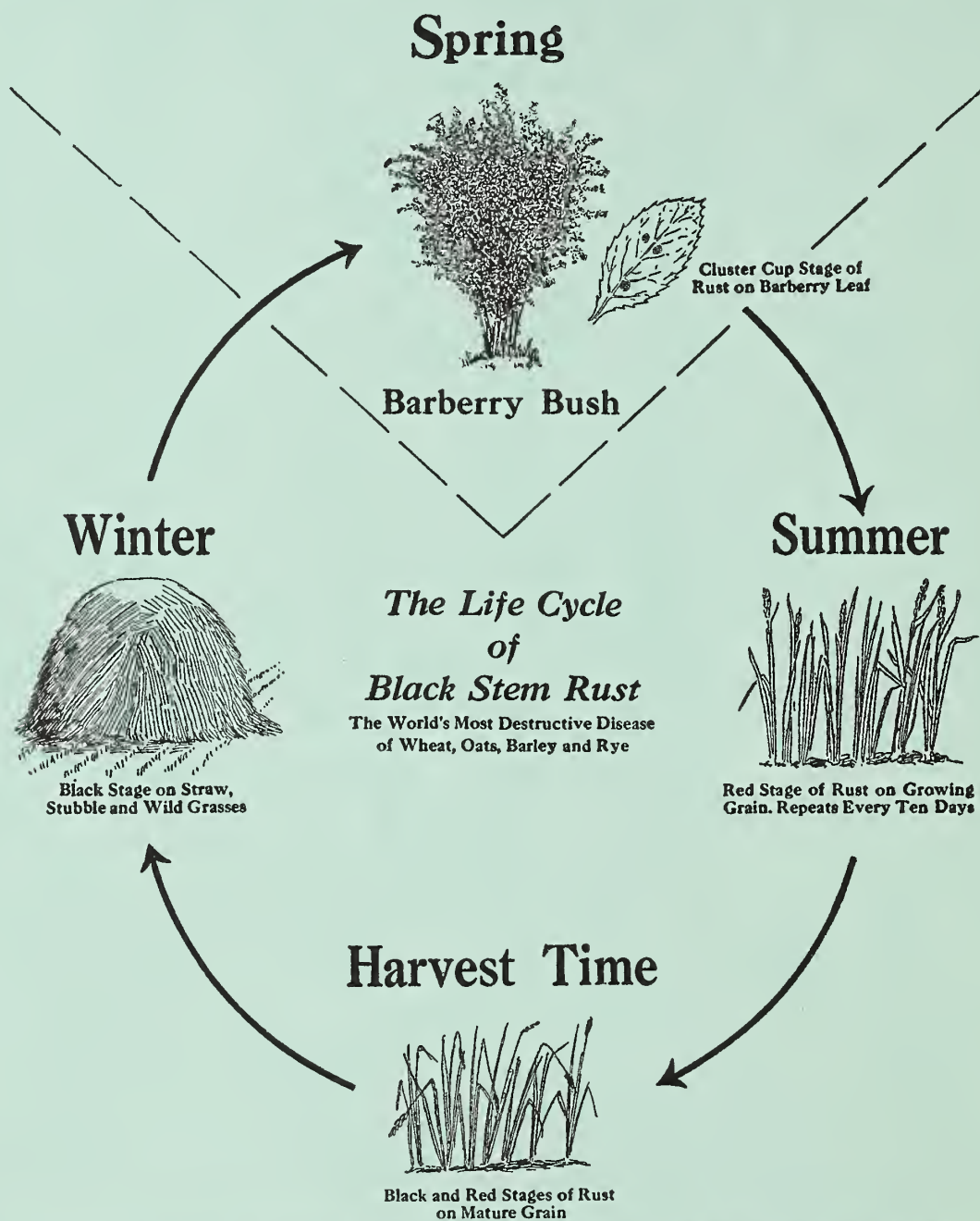
Indiana in 1930



*Black Stem Rust Spread From This Common Barberry Bush
To Near-by Grain Fields Causing Severe Damage*

Barberry Eradication Pays

Remove the Barberry and Break the Rust Cycle



All Common Barberries act as starting points for Black Stem Rust early each spring. By destroying the barberry the early spring source of black stem rust is eliminated. The Common Barberry provides a means to bridge the gap between the black stage on grain in the fall and the red stage of the rust on grains and grasses the following spring.

**BOOST BARBERRY ERADICATION—A PRACTICAL RUST
CONTROL MEASURE**

PROGRESS OF THE BARBERRY ERADICATION CAMPAIGN
IN INDIANA, 1930

By Wayne E. Leer, Agent, 1/

Office of Barberry Eradication, Bureau of Plant Industry,

United States Department of Agriculture.

HISTORICAL

The rust problem is as old as recorded history. The Romans, the Greeks, and the Hebrews recognized the rust as a serious pest. Roman mythology bears evidence of this in the fact that these people worshipped special rust Gods, Rubigus and Rubigo.

As early as 1660, the French people recognized the importance of black stem rust, as evidenced by the fact that a local ordinance against the growing of common barberry bushes was passed in Rouen, France, where it had been observed these bushes bore a direct relation to the spread of rust.

The early colonists in New England recognized the common barberry as a pest, and Connecticut passed laws in 1726 and again in 1779 which provided towns with the authority to forbid the cultivation of common barberry bushes within their boundaries. Similar laws were passed in Massachusetts in 1755 and Rhode Island in 1766 and 1772. As early as 1805, the people of Denmark began agitation against the common barberry.

Reports as early as 1868, mention the fact that stem rust caused serious injury to small grains in Indiana.

ORIGIN

Black stem rust has always been an important factor in

1/ Leader of Barberry Eradication in Indiana.

the growing of small grains in the North-Central States. Stem rust epidemics became more severe and occurred more frequently as the number of barberry bushes increased in this area. In 1916, during the world war a great epidemic of black stem rust swept over this area of the United States. As a result, this country suffered an estimated loss of 200,000,000 bushels of wheat and correspondingly large losses of other small grains. This enormous loss of small grains coming at such a critical time attracted the attention of both the growers and the consumers of these products.

The eradication of the common barberry in the thirteen North-Central grain-growing States, Colorado, Illinois, Indiana, Iowa, Michigan, Minnesota, Montana, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin, and Wyoming, was recommended by plant pathologists as the most immediately effective means of reducing the number and severity of stem rust epidemics. Through the combined efforts of the United States Department of Agriculture, State agricultural forces, and private organizations, the Barberry Eradication Campaign was organized and field activities begun in the spring of 1918.

BARBERRIES AND STEM RUST IN INDIANA

The damage to Indiana small grains due to black stem rust is ordinarily restricted to localized areas, depending upon the proximity of common barberry bushes. If weather conditions during the growing season favor the spread of rust, epidemics within the State may be numerous. However, the severity and extent of such local outbreaks depend on moisture and temperature conditions, the stage of development of the grain at the time of initial and

subsequent infection, and local topography. Several instances have been recorded in which individual farmers or communities of farmers have abandoned attempts to raise wheat on account of the annual recurrence of black stem rust. Many times areas in which severe local spreads of stem rust have recurred for two or more years a careful survey has located the barberry bushes responsible for the infection.

OTHER CEREAL RUSTS IN INDIANA

There are several different rusts which attack small grains. In addition to black stem rust, orange leaf rust of wheat and crown rust of oats, commonly occur in Indiana. The different rusts are often confused because their summer or red-spore stages are similar in appearance. Only black stem rust is spread by the common barberry. Crown rust of oats is spread by a few varieties of buckthorn. Experiments are now in progress by the Department of Botany at the Purdue University Agricultural Experiment Station, in cooperation with the United States Department of Agriculture, to determine which varieties of wheat are the most resistant to leaf rust.

ORGANIZATION AND COOPERATION

Barberry eradication is being cooperatively conducted by the United States Department of Agriculture, Purdue University, and private organizations. In Indiana, the work is supervised by the Office of Barberry Eradication, Bureau of Plant Industry, United States Department of Agriculture. An office is maintained at Purdue University Agricultural Experiment Station where the best of cooperative relations exist.

Many organizations have aided the barberry eradication campaign. The most outstanding one is the Conference for the Prevention of Grain Rust, of Minneapolis, which is an organization of agricultural and business leaders. It has supplied funds, materials, and valuable leadership in the development of the educational phases of the campaign.

Personnel

The personnel of the barberry eradication organization in Indiana consists of a Leader in Charge, an office secretary, and a corps of field assistants. Field activities usually begin early in the spring and continue until late in the fall. Field men are selected with the approval of the Director of Purdue University Agricultural Extension Department and the United States Department of Agriculture. Only men of maturity having farm experience or experience in eradication work are employed. Before going into the field all agents receive special training in methods of survey and eradication, and also instructions in fiscal matters and problems with which they must deal.

Finance

The barberry eradication campaign in Indiana is financed by the Federal Government through the United States Department of Agriculture. Indirect assistance is given by Purdue University Agricultural Experiment Station and the Extension Department in the form of office space, heat, light, storage, drayage, and printed and illustrated material, besides the personal services of the members of the staffs of these organizations.

SURVEY ACTIVITIES, 1918 - 1930.

Survey activities were started in Indiana in April, 1918,

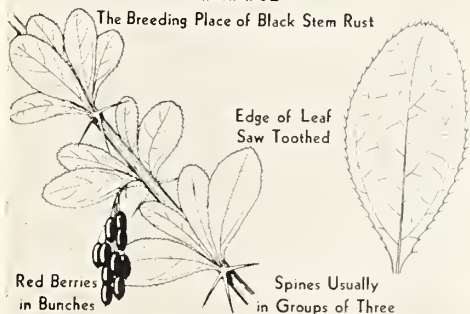
Learn to Know Common Barberry



COMMON BARBERRY

HARMFUL

The Breeding Place of Black Stem Rust



Red Berries
in Bunches

Edge of Leaf
Saw Toothed

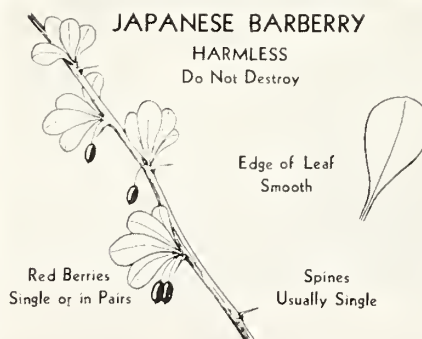
Spines Usually
in Groups of Three



JAPANESE BARBERRY

HARMLESS

Do Not Destroy



Red Berries
Single or in Pairs

Edge of Leaf
Smooth

Spines
Usually Single

Report common barberry bushes you may find, to the Barberry Eradication Office in your State, your Agricultural College, your State Department of Agriculture, or the Barberry Eradication Office, United States Department of Agriculture, Washington, D.C.

Black Stem Rust

spreads from Common Barberry Bushes
to Wheat, Oats, Barley, Rye and many
Grasses



Black stem rust of small grains is caused by a tiny parasitic plant. In the Northern States it lives for a time each spring on the leaves of common barberry bushes. The dust-like spores of the rust are spread by the wind for miles from barberry bushes to grain fields and from one grain field to another. Warm, moist weather aids the rapid development and spread of stem rust, just as the growth of corn, wheat, or other crops is affected by favorable weather conditions. Destroy common barberry bushes and reduce losses from stem rust.

when specially trained men were employed to inspect yards, parks, and cemeteries in the cities and larger towns for common barberry bushes. In August, 1919, the farm-to-farm survey of the rural districts was begun. The first or preliminary survey was conducted hurriedly to find and destroy the largest number of bushes in the shortest possible time, thus more rapidly reducing the likelihood of severe stem-rust losses and further spread of barberry seed. This survey, which included both a property-to-property search of cities, towns, and villages, and farm-to-farm survey of the rural districts, was completed in November, 1924.

The second survey, which is much more thorough, began in May, 1925, and has been the major activity since that date. A considerable amount of time is spent each year working in many areas of escaped bushes in various parts of the State. A resurvey of all properties on which common barberries have been found has been made and subsequent inspections of these locations will be made as the appearance of seedling bushes indicates the need for such work.

DIFFICULTIES OF SURVEY AND ERADICATION

The complete eradication of the common barberry in Indiana is a difficult task. For more than 100 years barberries have been planted on Indiana home sites, many of which are now abandoned. Weeds, shrubbery, and trees hide many bushes from view, so that an extremely careful survey is necessary. Years will have passed before the State can be pronounced entirely free from these rust-spreading bushes. The difficulty is increased by the fact that many bushes which have sprung from seeds scattered by birds and other agencies are often found in almost inaccessible places. Frequently barberry seeds fail to germinate for three or four years,

and after germination several years must elapse before the seedlings are big enough to be easily found.

Areas of Escaped Bushes

Probably the most difficult problem of the campaign is the thorough clean-up of the numerous areas of escaped bushes within the State. A mid-sized common barberry produces approximately 23,000 seeds each year. Seeds from the thousands of old fruiting barberries have been scattered extensively by birds to adjacent groves and orchards, fence rows, brushy pastures, thickets, stream banks, and woodlands of every type. Because of the difficulty of eradication under these conditions, the clean-up of the areas of escaped bushes is proving extremely slow.

Chemical Treatment

Killing common barberry with crushed rock salt or kerosene has proved much more effective than digging. The relatively few bushes not killed by the treatment of salt or kerosene were found to have been improperly treated or were treated with too small a quantity of the chemical. Care must be used in the application of either chemical. The base of every shoot must be treated. While the amount of either chemical necessary to kill a bush will vary according to the size of the bush, twenty-five pounds of salt or a gallon of kerosene poured into a crown twelve inches in diameter will usually kill the bush. The digging method of eradication is used only where barberry bushes are found growing close to valuable shrubs or trees which might be injured if salt or kerosene were applied.

SURVEY ACTIVITIES, 1930

Field activities were begun May 1, 1930 in an area of escaped bushes growing near Freedom, in Owen County. In this area 39 bushes were destroyed on 6 properties.

In the vicinity of Ellettsville in Monroe County, 47 bushes were destroyed on 10 properties early in June.

About the middle of June, one crew of field men was sent to an area of escaped bushes near Crandall in Harrison County and another crew to an area of escaped bushes in Dearborn County. In Harrison County 49 bushes were destroyed on 4 properties, and in Dearborn County 115 bushes and 100 seedlings were destroyed on 8 properties.

Late in June, the entire field force was sent to Wayne County where 1,349 bushes and 180 seedlings were destroyed on 45 properties.

On July 1, a crew of eight men began a second survey of Bartholomew County, and a crew of six men began work in Decatur County. By September 1, 50 per cent of Decatur County had been completed. Twenty-nine bushes and 56 seedlings had been destroyed on 18 properties. By September 15, 90 per cent of Bartholomew County had been surveyed and 15 bushes had been destroyed on 11 properties.

PUBLICITY AND EDUCATIONAL ACTIVITIES, 1930

An intensive educational and publicity program was carried on during the year to better acquaint the public with the relationship between the common barberry and black stem rust, the nature of the barberry eradication campaign, and to create a more active interest on the part of property owners in the control methods being

employed.

Just prior to the time the field men were sent to Bartholomew and Decatur Counties, a colored postcard was mailed to all rural route box holders announcing that a survey was to be made of these counties during the summer. About the middle of August, a letter was mailed to these rural route box holders in order to renew their interest in the work.

Window displays consisting of a colored, 3-winged panel, common and Japanese barberries, rusted straw, and shriveled grain were used in all counties worked during the year. These displays were placed in the windows of the leading business houses of the cities and towns. A demonstration was placed at the Bartholomew County fair in August. The usual Indiana State Fair barberry demonstration was placed in the Purdue University building again this year. The idea that barberry bushes have escaped from cultivation was featured in this demonstration.

Educational activities were carried on in the high schools and 4-H club camps during 1930. A special educational assistant visited and discussed barberry eradication in 155 high schools during the year. These talks were heard by approximately 15,968 pupils and many interested people who visited the schools. It is planned to discuss barberry eradication in every high school in the State once in four years. Barberry eradication was discussed at 21 4-H club camps during the year. Approximately 4,080 boys and girls from 77 counties were in attendance at these camps.

The newspapers and radio stations of the State offered their facilities for the distribution and broadcasting of news articles and radio talks.

COMMON SALT KILLS BARBERRY BUSHES AND PREVENTS SPROUTING



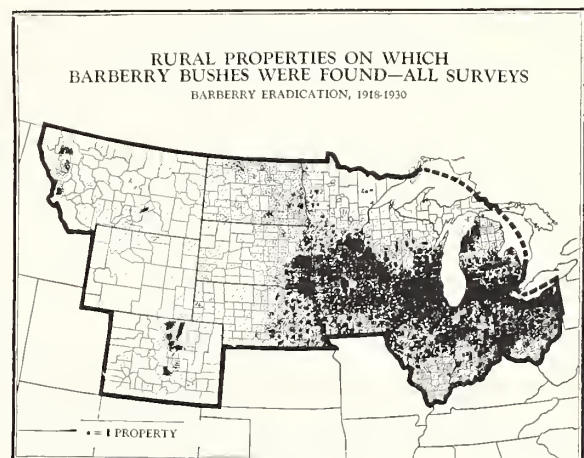
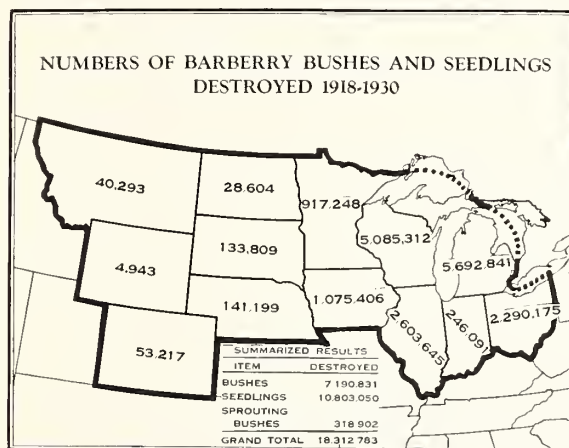
SALTING A BUSH



SPROUTS FROM DUG BUSH

Birds, animals and man chiefly are responsible for the wide distribution of the seeds of common barberries. Every fence row, thicket, pasture or wood is a possible hiding place for these bushes.

Every man, woman and child should consider it his or her duty to look for and report common barberry bushes.



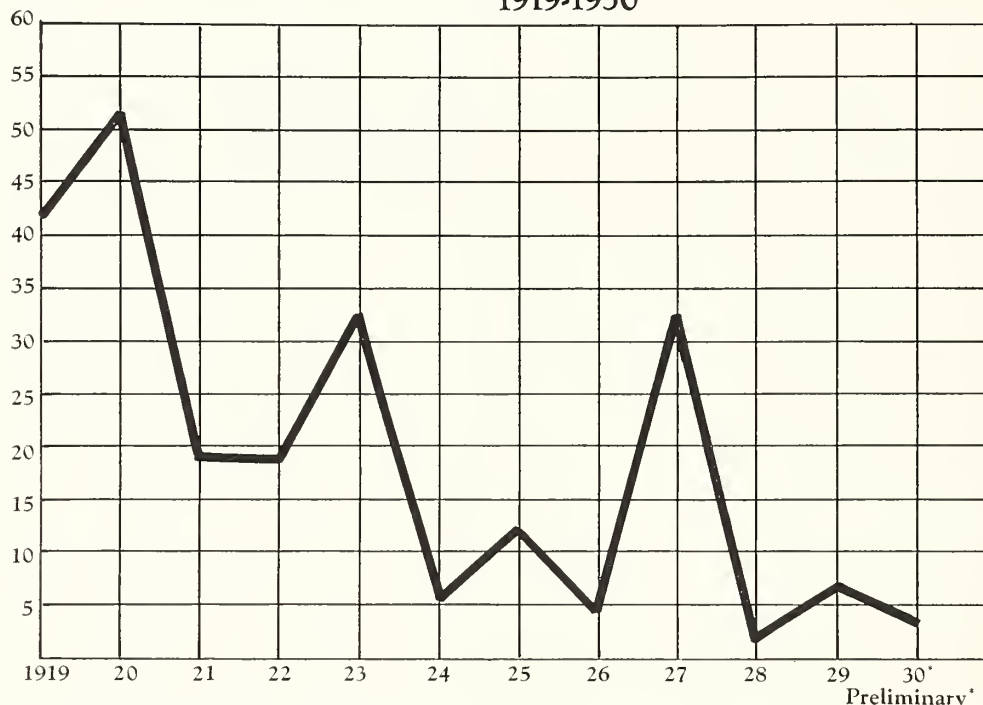
More than 18 million sources of black stem rust
were removed 1918-30

Prepared by the Rust Prevention Association, 300 Lewis Building, Minneapolis, Minn., in co-operation with Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D.C.

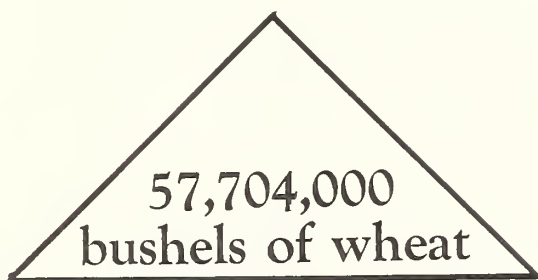
Barberry Eradication Pays

In Millions
of Bushels

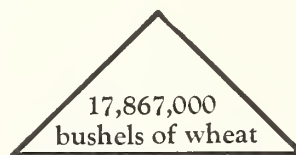
Wheat losses in Barberry Eradication Area 1919-1930



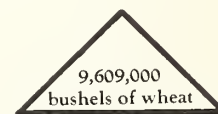
The losses to small grain crops caused by black stem rust have been reduced since the beginning of the barberry eradication campaign in 1918. The breeding of rust-resistant varieties, the use of early maturing varieties, and the sowing of crops early, have aided in this reduction.



Average annual loss
five-year period
1916-1920



Average annual loss
five-year period
1921-1925



Average annual loss
five-year period
1926-1930

**Millions of bushels of oats, barley and rye also are
damaged each year by black stem rust**

Rust shriveled grain always is discounted

**Destroy all Common Barberries—Reduce Losses from Stem Rust.
Receive the Highest Available Price for Grain.**

LEARN TO RECOGNIZE THE COMMON BARBERRY.

Every citizen should learn to know the common barberry which is a tall, erect shrub, averaging 5 to 10 feet in height. The bark is gray, but the wood of both stems and roots is bright yellow in color. Spines occur along the branches in groups of three or more. The leaves are produced normally in clusters, always have saw-toothed edges, and may be either green or reddish purple in color. The small yellow flowers are inconspicuous but very fragrant. The oblong berries, which are produced in drooping clusters like currants, readily attract attention after they turn red in the late summer and fall.

Japanese Barberry

Not all barberries are harmful. The Japanese barberry (Berberis thunbergii DC.) does not spread stem rust, and its use for landscaping may be encouraged.

SUMMARY

The object of the barberry eradication campaign in Indiana is: (1) Locate and destroy all common barberry bushes in the State, and (2) Inform property owners about the bush and its part in the dissemination of stem rust so that they may report any bushes that have been overlooked by the field agents or that have developed from seed since the survey was made.

During 1930, areas of escaped bushes in Owen, Monroe, Harrison, Dearborn, Wayne, Henry, Marion, and Fountain Counties were inspected and a systematic survey conducted in Bartholomew and Decatur Counties. As a result of these survey activities, 1,885 bushes were destroyed on 139 properties. Of this number, 1,630 bushes had escaped and were found on 44 properties. In

addition to these, 611 seedlings and 5 sprouting bushes were found during the year. These findings make a total of 202,304 bushes, 23,787 seedlings, and 20,004 sprouting bushes found on 5,411 properties since the beginning of the campaign in 1918.

The successful continuation of the barberry eradication campaign in Indiana depends upon careful and persistent field work, a definite educational program and the cooperation of the people of the State.

Please report all bushes which you think may be common barberry to the Office of Barberry Eradication, Purdue Agricultural Experiment Station, West Lafayette, Indiana.

PROPERTIES HAVING BARBERRY BUSHES 1918-1930

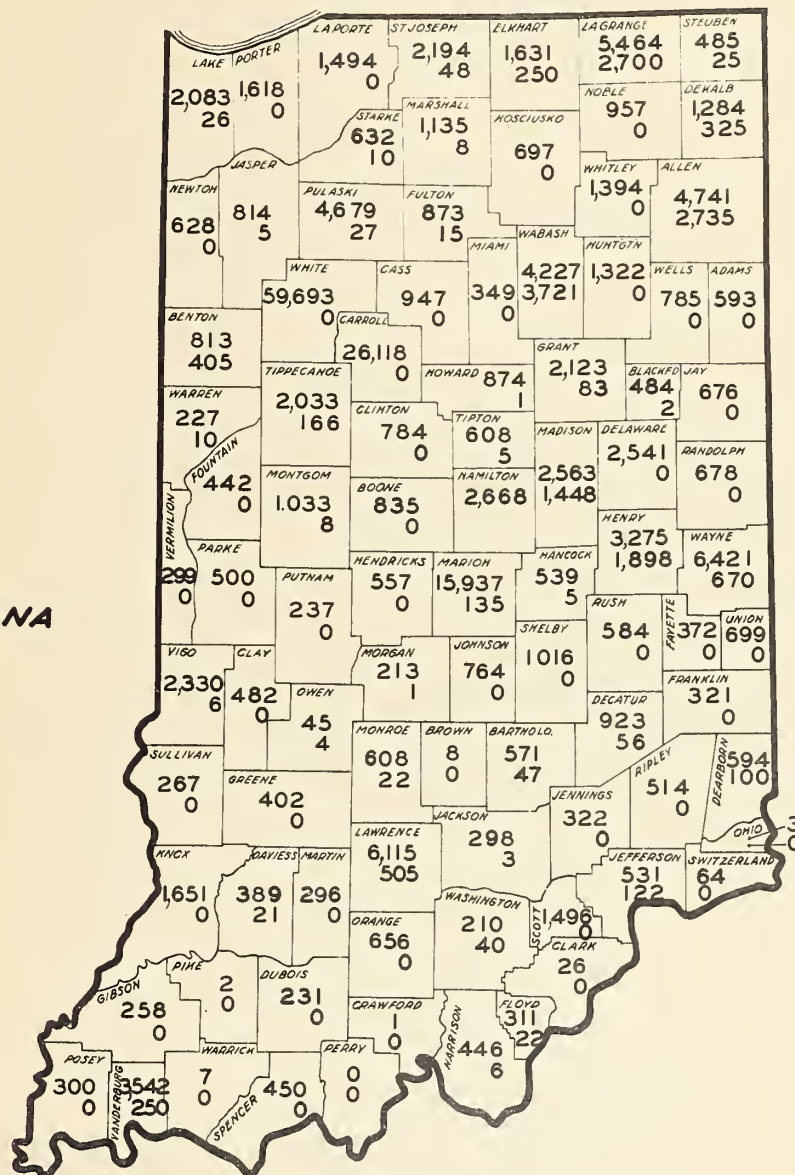
INDIANA

5,411 PROPERTIES
246,095 BUSHES



- FARMS HAVING BARBERRY BUSHES
- TOWNS HAVING BARBERRY BUSHES

INDIANA



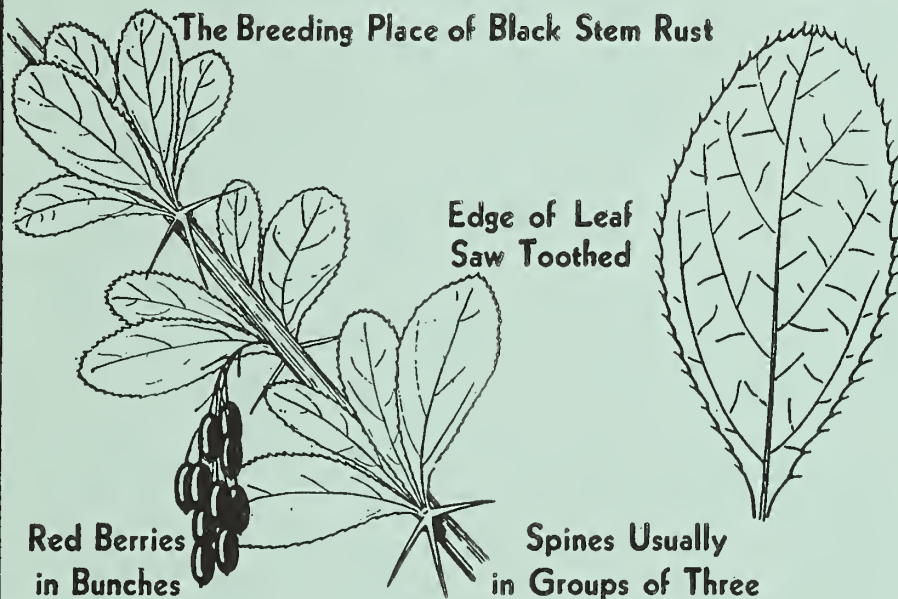
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Common Barberry Spreads Black Stem Rust

COMMON BARBERRY

HARMFUL

The Breeding Place of Black Stem Rust



Red Berries
in Bunches

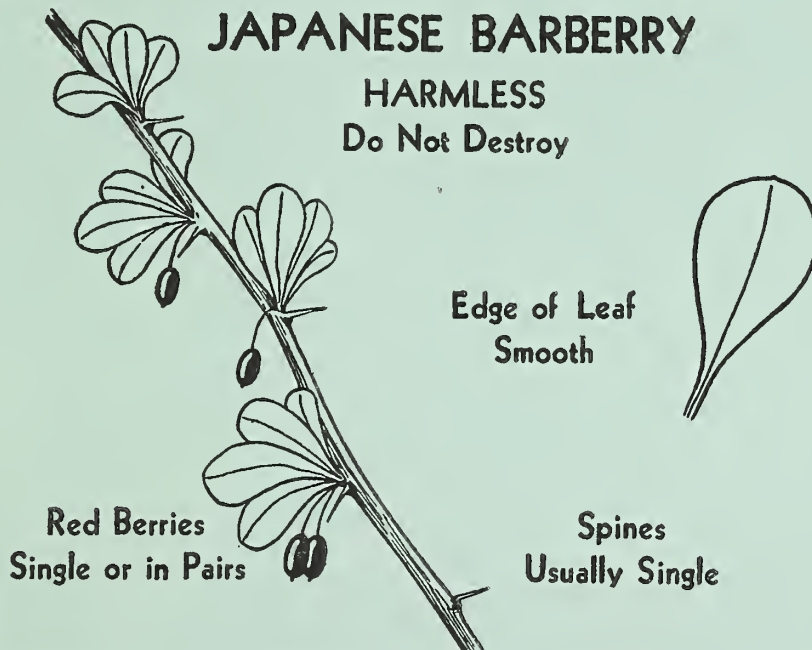
Edge of Leaf
Saw Toothed

Spines Usually
in Groups of Three

JAPANESE BARBERRY

HARMLESS

Do Not Destroy



Red Berries
Single or in Pairs

Edge of Leaf
Smooth

Spines
Usually Single

Look For and Report All Common Barberry Bushes
To the State Leader of Barberry Eradication, in care of your State Department of Agriculture or your State Agricultural College.

Common Barberry Bushes

spread

Black Stem Rust

to

WHEAT, OATS,
BARLEY, RYE,
and Many Wild
Grasses

THIS Progress Report is prepared and printed by the Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C. The cover is furnished by the Conference for the Prevention of Grain Rust, 300 Lewis Building, Minneapolis, Minnesota.